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Rose hybrids

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ROSA RUGOSA HYBRIDS.

About ten years ago the Iowa Agricultural College imported from Russia types of the Rosa rugosa family, varying materially from the varieties introduced from China and Japan. The Russian forms prove hardier in the north, are more graceful in habit, and are finer in bud, flavor and foliage than the Japan varieties. Prof. L. H. Bailey, of the Cornell University Experiment Station, says in *American Gardening* (June, 1892, p. 342), of these types :

"The form of rugosa from Russia, when grown side by side with the ordinary type, is about two weeks later to bloom, and a little darker in color. Where the ordinary rugosa has only two or three buds and flowers in a cluster, this one averages about four or five. The buds show a rich dark red between the narrow sepals, and besides being very long they are very pretty. * * * The blossom from which our engraving is made measures six inches across. * * * The double form of the rose introduced by Professor Budd seems to belong to the rugosa strain, and is known as *R. cinnamomea.* The blooms are six inches across, quite double, crimson in color, not quite so glowing as the type of rugosa, but more fragrant. The leaves are slightly serrated, bright green and leathery."

As to the history of these Russian roses we may state that Karl Koch[1] says that the *R. rugosa* is very closely related to *R. Kamschatica*, and differs from it chiefly in the fact that the bristly hairs are less closely crowded, and is destitute of woolly pubescence except on the points of growth. On the under surface of the leaves, however, the pubescence of *R. rugosa* is more prominent. Meyer and Siebold unite the two

[1]Dendrologie, Koch. Vol. 1, p. 238.

species, and other authors unite *R. Kamschatica* and *R. cinnamomea*, while Pallas describes the Siberian form of *R. cinnamomea* as *R. Dahurica*. The observations of the writer in 1882 in East Europe favor the opinion that these different forms all belong to the same species, and are not as much varied as the different varieties of our native plums.

The work of crossing began June 10, 1892, and was continued till early in July, the total number of flowers crossed being about 1,300. The number of seeds secured in the fall was about 20,000. The pollen of many varieties of cultivated roses was used, mainly of the Hybrid Perpetual and Tea classes. General Jacqueminot was used chiefly, as it produces a large amount of pollen. The pollen was mainly saved from flowers received from Des Moines and St. Louis. The stamens were removed before the buds opened, and the pollen was applied one, two or three days after, as the stigmas matured. One pound manilla paper sacks were used for covering the blossoms before and after pollination. When the hips began to form, the paper sacks were removed and tree labels were attached. The hips were gathered when ripe and the seeds left in them until well cured. When taken out the seeds were mixed with sand and placed in the cellar until cold weather, when they were buried just below the surface on dry soil, for winter freezing. Early in April the seeds were sown in a bed in shallow drills, and covered with lath screens until the seeds germinated. Many of the seeds were destroyed by moles and mice, and the extreme drouth following the wet of the spring destroyed a number of the young plants.

In the following list the pistillate parent is always mentioned first. It will be noted that *R. rugosa* was used in all cases as the pistillate parent, except as noted.

Rosa rugosa X General Jacqueminot. — Of 497 flowers crossed we had, on October 5th, 255 plants. They present some remarkable variations. As compared with pure seedlings the hybrids indicate weaker germinating capacity. As grown side by side, an equal extent of rows shows 106 hybrids tc 166 of the pure rugosa seedlings. In size the hybrids are much the largest. Twenty-five of the tallest rugosa seedlings averaged 8.24 inches in height, ranging

from 7 to 12 inches; the two tallest being 11 and 12 inches respectively. Twenty-five of the tallest hybrids averaged 16.36 inches, ranging from 13 to 22 inches. The hybrids were much branched, so that the superiority in growth was more than the figures indicate.

The tallest hybrids showed the most marked modification in foliage. One hundred and thirty-two of the plants show marked variations, many of them showing no rugosity of leaf, while others are intermediate in foliage. Those following most nearly the rugosa type are small plants like the pure seedlings. The leaflets of rugosa are mostly crenate, while those of the hybrids showing no rugosity of leaf are serrate. The rugosa leaflets vary in number from five to nine, the usual number being seven, and a few of the points of growth only five. In some of the hybrids the usual number is five, with an occasional leaf bearing seven, and the leaflets average larger in size. Several of the hybrids have very small leaflets, and are dwarf in habit. Many show red color in the young leaves while unfolding, which is not found in the pure rugosa seedlings. On October 5 the pure seedlings had well ripened leaves and many were turning brown and yellow, while the foliage of the hybrids was still green. When put in the cellar November 4 the pure seedlings had shed their leaves, while many of the hybrids still had green foliage.

Six of the hybrids showed bloom the past summer, some before they were four months old. All of them showed an increased number of petals. Rosa rugosa has five petals, varying in color from crimson to pink and white. One of the hybrids had fourteen petals and was pink. Another, blooming when three inches high, had twenty-eight petals with the brilliant color of General Jacqueminot. None of the pure rugosa seedlings showed signs of blooming. A few of the hybrids showed mildew on the points of growth as the cold nights came on.

Our experience the first year indicates:

1. The staminate parent, Gen. Jacqueminot, has materially modified the foliage.

2. The hybrid seedlings greatly exceed the pure seedlings in vigor of growth.

3. The hybrid seedlings show a tendency to early blooming not indicated by the pure rugosa seedlings.

R. rugosa X Duchesse de Brabant.—Of thirty-six flowers crossed we secured ten plants, all of the rugosa type except two. One of these is only two and one-half inches in height with no rugosity of leaf. The other is the largest of the ten, being fifteen inches in height, strongly branched, and with no rugosity of leaf.

R. rugosa X Lamarque.—The Lamarque belongs to the Noisette or Champney type and is a climber. Of sixteen flowers crossed we secured but two plants. One is eighteen inches in height, much branched and with large leaves, with no trace of rugosity. The other is eleven inches in height, well branched with smaller smooth leaves.

R. rugosa X Harrison's Yellow.—Of 106 flowers crossed only one plant was saved. This is eleven inches in height, strongly branched with foliage of the rugosa type.

R. rugosa X American Beauty.—Of ten flowers crossed only five plants were saved. All of the rugosa type with varied size, the tallest only eight inches.

R. rugosa X Harrison's White.—Of fifty-seven flowers crossed thirty-one plants were saved. Seven of these have the Harrison's White type of leaf, usually with nine small leaflets, serrate; branches very thorny. The four largest are eleven, twelve, twelve and sixteen inches in height respectively. The largest of the plants with rugosa type of foliage is eleven inches in height.

R. rugosa X Triumph de Exposition.—Of twenty-one flowers crossed only two plants were secured. One is only two and one-half inches in height, with rugosa foliage. The other is six inches in height and greatly modified in foliage; leaflets five to seven, narrow and finely serrated.

R. rugosa X R. rugosa fl. pl.—The male parent in this case was imported under the above name from Russia, and is the double form referred to by Prof. Bailey, supposed to be *R. Cinnamomea*. Of thirty flowers crossed we saved 112 plants, mostly of the rugosa type. The two tallest are fifteen and sixteen inches in height with an approach to the foliage of the male parent. A larger percentage of the seeds germinated than from any of the other crosses, and all the plants

are strong and thrifty. The two parents are closely related, hence the result is not surprising.

R. rugosa X Madame Masson.—Of thirteen flowers crossed, only one plant was saved. It is only two inches in height, branched, with three to seven leaflets, smooth, round ovate, serrate, and with no trace of the rugosa.

R. rugosa fl. pl. X Multiflora.—Of ten flowers crossed one plant was saved. This is five and one-half inches high, with broadly oval leaflets and very thorny branches and trailing habit.

R. Arkansana X General Jacqueminot.—Of thirty-seven flowers crossed thirteen plants were saved. All show much mildew except four. The four plants with perfect foliage follow the General Jacqueminot closely. All the plants with the mother type of leaf show the mildew. The largest plant of each type is eighteen inches in height.

R. blanda X General Jacqueminot.—Of sixty-seven flowers crossed six plants were saved. The plants are all strong with the *R. blanda* type of leaf.

Seeds that did not Germinate.

Quite a large number of *R. rugosa* blossoms were crossed with pollen of Prince Bismarck, Triumph d' Angiers and Magna Charta. Of these not a single seed germinated. The same result followed with the following crosses: R. rugosa (white Japan type), X American Beauty; R. rugosa fl. pl. X General Jacqueminot; R alpina typesa X Papa Gontier; R. rubifolia X General Jacqueminot; R. blanda X La France; R. blanda X General Jacqueminot.

We shall leave the beds undisturbed with the hope that many of the seeds will germinate next season. Jackson Dawson reports this is a common result with crossed seeds.

The pollen of many other varieties was used, but none of the flowers developed hips.

Time to apply pollen.—We have thirty-seven plants not noted above from a cross of R. rugosa and General Jacqueminot. In this case the stamens were removed in the morning from thirty flowers which had opened during the night, and the pollenizing performed in the afternoon of the same day. All except two of the plants have the leaf of the

rugosa. This indicates that the stamens should be removed one or two days before the blossom opens, as was done in all the other crosses made.

Very dry pollen.—Our experience in these crosses and in all our crosses of the orchard fruits indicates the best results from the use of very dry pollen. This is especially true in crossing the rose. In some cases we secured a good stand with very dry pollen, and a very small stand with that only partially dried.

Probable Results.

The lack of hardy double roses for the prairies of the Northwest is well known. All the choice varieties must be carefully protected in winter, and many refuse to bloom with the best of care.

The beauty of foliage and undoubted hardiness of *R. rugosa*, especially the Russian types, has called the attention of many to the probable valuable results of crossing it with our best garden roses, and some work of this kind has already been done. But the hybrids which up to this time have been tested are from the Japan type. Madame G. Bruant is a hybrid between the Japan rugosa and a Tea rose (Sombreuil). The hybrids of E. S. Carman are from the Japan rugosa crossed with Harrison's Yellow, several of the Hybrid Remontants and the Hybrid Teas; and a number of varieties have been produced with double, or nearly double, flowers which are specially fragrant, and with more or less traces of the handsome foliage of the mother. As with us the varieties follow most closely the male parents. The hardiness and freedom from mildew is not specially promising. Our hope is that among our many varieties we will secure a few with the hardiness and approach to the leaf of the rugosa, with flowers rivaling in beauty and fragrance the Hybrid Perpetuals and the Teas.